Hiram Quadrangle, Maine

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DEPARTMENT OF CONSERVATION
MAINE

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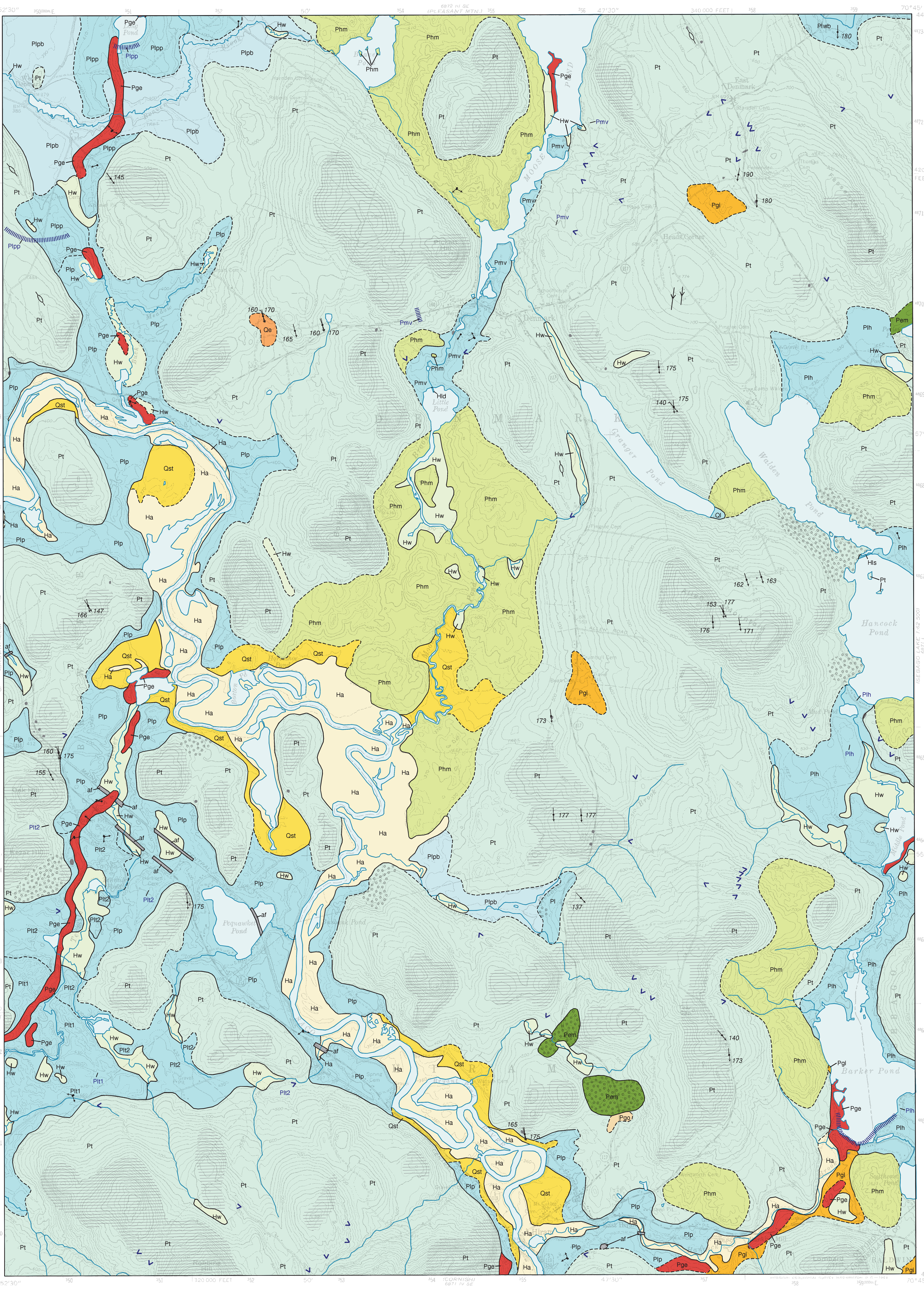
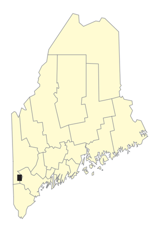
For additional information, see Open-File Report 99-116.

Surficial Geology



SOURCES OF INFORMATION

Surficial geologic mapping by Woodrow B. Thompson completed during the 1994-1995 field seasons; funding for this work provided by the U. S. Geological Survey STATEMAP program. William R. Holland conducted additional surficial geologic and materials field work during the 1983 field season, funded by the significant sand and gravel aquifer program of the Maine Geological Survey.



Quadrangle Location

SCALE 1 : 24,000

1 MILE

7000 FEET

1 KILOMETER

CONTOUR INTERVAL 20 FEET

TRUE NORTH

Topographic base from U.S. Geological Survey Hiram quadrangle, scale 1:24,000 using standard U.S. Geological Survey topographic map symbols.

The use of industry, firm, or local government names on this map is for location purposes only and does not impute responsibility for any present or potential effects on the natural resources.

Ha — **Stream alluvium** - Sand, silt, gravel, and organic material. Deposited on flood plains of modern streams.

Hw — **Wetland deposits** - Peat, muck, and fine-grained inorganic sediments. Deposited in poorly drained areas.

Hls — **Beach** - Narrow sand and gravel deposits formed by wave and current action on modern lakeshores. Mapped only at north end of Hancock Pond, but may be expected to occur elsewhere, especially where shorelines have formed on glacial sand and gravel.

Hld — **Lacustrine delta** - Sediments deposited where Moose Pond Brook enters Little Pond.

Ql — **Lake deposits** - Lacustrine sediments of uncertain age at southeast end of Granger Pond.

Qe — **Eolian deposits** - Windblown sand. May occur as dunes or irregular blanket deposits.

Qst — **Stream-terrace deposits** - Sand and gravel deposited on former flood plains of the Saco River as it cut down to its present level.

Plpp, Plp, Plpb — **Lake Pigwacket deposits** - Sand gravel, and silt deposited in Lake Pigwacket, which occupied the Saco Valley in late-glacial time.

Plpp - Pleasant Mountain stage deposits - Sediments deposited in Lake Pigwacket when it was at its highest level (~440 ft elev.) in the northwest part of the quadrangle. Unit includes ice-contact deltas and subaqueous fans.

Plp - Undifferentiated Lake Pigwacket deposits - Sediments deposited in the Saco Valley, where the lake level stood at 410-430 ft. Unit includes abundant deltaic deposits, which locally have been eroded by the postglacial Saco River.

Plpb - Lake-bottom deposits - Sand and silt deposited on the floor of Lake Pigwacket.

Pl — **Undifferentiated lake deposits** - Sand and silt deposited in small glacial lake in Dragon Meadow Brook valley. Probable spillway for this lake is located about 0.5 mile south of unit Pl.

Pmv — **Moose Pond valley deposits** - Deltaic and fluvial sand, gravel, and silt deposited in a glacial lake in the Moose Pond valley. Lake level stood as high as 440-450 ft, but probably dropped to about 430 ft as ice melted from the valley.

Plwb — **Willett Brook deposits** - Ice-contact glaciolacustrine(?) sand and gravel deposited in the upper part of Willett Brook valley. Unit extends north and east into the adjacent quadrangles.

Plt_2, Plt_1 — **Glacial Lake Tenmile deposits** - Sand and gravel deposited in a glacial lake in the Tenmile River valley. Mostly deltaic, but probably includes some fluvial deposits.

Plt_2 - Deposits associated with lower level of the lake, at elevation of about 440 ft. This lake stage drained east into the Saco Valley.

Plt_1 - Deposits formed when lake level stood at 470-480 ft and drained southward through a spillway at the head of Tenmile Valley (in Kezar Falls quadrangle).

Plh — **Glacial Lake Hancock deposits** - Deltaic sand and gravel deposited in a glacial lake that occupied the valley extending north and south from Hancock Pond. Delta tops indicate lake level of about 510-530 ft (higher to north due to crustal tilt).

Pgo — **Glacial outwash** - Sand and/or gravel deposited in front of moraine cluster north of Hiram village.

Pgi — **Ice-contact deposits** - Undifferentiated sand and gravel deposits formed in contact with melting glacial ice.

Pge — **Esker deposits** - Sand and gravel deposited by meltwater streams in glacial tunnels. Unit may also include some tunnel-mouth lacustrine fan deposits. Chevrons indicate inferred direction of stream flow.

Phm — **Hummocky moraine** - Glacial till with hummocky topography. Usually contains many boulders. Lenses of sand, gravel, and silt are locally abundant. Unit also includes moraine ridges that probably formed at the glacier margin during recession of the last ice sheet.

Pem — **End moraine** - Very bouldery till ridges deposited at the glacier margin in the valley north of East Hiram and north of Perley Pond.

Pt — **Till** - Loose to very compact, poorly sorted, mostly nonstratified mixture of sand, silt, and gravel-size rock debris deposited by glacial ice. Locally contains lenses of water-laid sediment.

af — **Artificial fill** - Mixtures of till, gravel, sand, clay, and/or artificial materials transported and dumped to form elevated sections of roadways and other filled areas.

Bedrock - Gray areas are individual outcrops. Ruled pattern indicates areas where outcrops are common and/or surficial sediments are generally less than 10 ft thick.

Boulders - Areas of numerous large boulders.

Contact - Boundary between map units. Dashed where location is very approximate.

Scarp - Scarp separating higher and lower terrace levels in a single map unit.

Ice marginal position - Line shows an approximate position of part of the glacier margin during ice retreat, based on ice-contact topography, end moraines, and/or meltwater channels. Letter symbol indicates map unit deposited (at least in part) from this position.

Moraine ridge - Line shows crest of moraine ridge in area mapped as till or hummocky moraine.

Glacially streamlined hill - Symbol shows trend of long axis, which parallels former ice-flow direction.

135 **Glacial striation locality** - Arrows show ice-flow directions (azimuths in degrees) inferred from striations (scratches on bedrock caused by glacial abrasion). Dot marks point of observation. Flagged trend is older.

Dip of cross-bedding - Dip direction(s) of cross-bedding in fluvial or deltaic deposits. Indicates direction of stream flow or delta progradation. Dot marks point of observation.

Kettle - Depression created by melting of buried glacial ice and collapse of overlying sediments.

Meltwater channel - Channel eroded by glacial meltwater stream or drainage from glacial lake. Arrow shows inferred direction of former stream flow. Accompanying map unit symbol (where present) indicates glacial lake stage for which the channel served as an outlet.

Grooved till surface - Narrow ridges carved in till by flow of glacial ice. Inferred ice flow directions are shown by arrowheads.

USES OF SURFICIAL GEOLOGY MAPS

A surficial geology map shows all the loose materials such as till (commonly called hardpan), sand and gravel, or clay, which overlie solid ledge (bedrock). Bedrock outcrops and areas of abundant bedrock outcrops are shown on the map, but varieties of the bedrock are not distinguished (refer to bedrock geology map). Most of the surficial materials are deposits formed by glacial and deglacial processes during the last stage of continental glaciation, which began about 25,000 years ago. The remainder of the surficial deposits are the products of postglacial geologic processes, such as river floodplains, or are attributed to human activity, such as fill or other land-modifying features.

The map shows the areal distribution of the different types of glacial features, deposits, and landforms as described in the map explanation. Features such as striations and moraines can be used to reconstruct the movement and position of the glacier and its margin, especially as the ice sheet melted. Other ancient features include shorelines and deposits of glacial lakes or the glacial sea, now long gone from the state. This glacial geologic history of the quadrangle is useful to the larger understanding of past earth climate, and how our region of the world underwent recent geologically significant climatic and environmental changes. We may then be able to use this knowledge in anticipation of future similar changes for long-term planning efforts, such as coastal development or waste disposal.

Surficial geology maps are often best used in conjunction with related maps such as surficial materials maps or significant sand and gravel aquifer maps for anyone wanting to know what lies beneath the land surface. For example, these maps may aid in the search for water supplies, or economically important deposits such as sand and gravel for aggregate or clay for bricks or pottery. Environmental issues such as the location of a suitable landfill site or the possible spread of contaminants are directly related to surficial geology. Construction projects such as locating new roads, excavating foundations, or siting new homes may be better planned with a good knowledge of the surficial geology of the site. Refer to the list of related publications below.

OTHER SOURCES OF INFORMATION

1. Thompson, W. B., and Holland, W. R., 1999, Surficial geology of the Hiram 7.5-minute quadrangle, Oxford and Cumberland Counties, Maine: Maine Geological Survey, Open-File Report 99-116, 11 p.
2. Thompson, W. B., and Holland, W. R., 1998, Surficial materials of the Hiram quadrangle, Maine: Maine Geological Survey, Open-File Map 98-229.
3. Neil, C. D., 1998, Significant sand and gravel aquifers of the Hiram quadrangle, Maine: Maine Geological Survey, Open-File Map 98-196.
4. Thompson, W. B., 1979, Surficial geology handbook for coastal Maine: Maine Geological Survey, 68 p. (out of print)
5. Thompson, W. B., and Borns, H. W., Jr., 1985, Surficial geologic map of Maine: Maine Geological Survey, scale 1:500,000.